

**REMARKS**

Claims 1-6 are pending in the application. Claims 1-3 are rejected. Claims 4-6 are objected to. Claim 4 is amended to place it into independent form to secure its immediate allowability. Applicant also has cancelled claims 5 and 6 and replaced them with new claims 7 and 8. Claim 7 is claim 2 dependent from claim 4. Claim 8 is claim 3, dependent from claim 7. This change will provide the same protection provided by original claims 4-6 and would necessitate only one additional independent claim.

***Claim Rejections - 35 U.S.C. § 103***

**Claim 1 is rejected under 35 U.S.C. § 103(a) as being unpatentable over David et al (6,018,203), Bretz et al (6,894,468), Piesinger (2004/0263147), and Kaku et al (2003/0002590).** This rejection is traversed for at least the following reasons.

The present invention concerns a control system for canceling load unbalance in a three-phase circuit. The invention, as defined in claim 1 and with reference without limitation to the exemplary embodiment in Fig. 1, comprises (1) phase current detectors 73A-73C for detecting phase currents caused to flow through a secondary circuit of a current transformer 71, (2) a zero phase current detector 75, for detecting a zero phase current caused to flow through a residual circuit of the current transformer, (3) phase change over switches 141-1410, (4) a control center 11 for, when a magnitude of the zero phase current detected by the zero phase current detector 75 is larger than a predetermined value, on the basis of the phase currents of the phases detected by the phase current detectors 73, respectively, outputting a control signal, and (5) a phase change-over slave station 131-1310 for controlling the phase change over for the phase change over switches 141-1410 in accordance with the control signal.

Applicants respectfully submit that the certain of the five claimed features, and at least the combination of the five claimed features, are not found in the prior art.

**David et al**

At page 2 of the Office Action, the Examiner asserts that David teaches the control system for canceling load unbalance of a three phase circuit. The Examiner identifies phase

current detectors (16-20), phase change-over switches (22-30), and a control center (12). The Examiner does not identify a zero-phase current detector in David, but asserts that it is "inherently" included in the control center. Similarly, the Examiner does not identify a phase change-over slave station, but asserts that it too is "inherently" included in the control center. The Examiner looks to the disclosure at col. 3, lines 64-67, col. 4, lines 1-10 and Fig. 1a for support for the "inherency" of such structures as well as the expressly claimed function that "a magnitude of the zero-phase current is larger than a predetermined value, the control center/slave station outputs control signals to the switches to cancel the unbalance of the circuit."

Applicants respectfully submit that such feature cannot be inherent in the disclosure of David et al on the basis of well established principles of law relating to "inherency". A single prior art reference anticipates a patent claim if it expressly or inherently describes each and every limitation set forth in the patent claim. *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Inherent anticipation requires that the missing descriptive material is "**necessarily present**," not merely probably or possibly present, in the prior art. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citing *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991)). The Examiner has made no showing that the two alleged "inherent" features are **necessarily present**, nor can such showing be made since there is no need for a "zero phase current detector" in David et al and no need for a phase change over slave station.

Further, the Examiner admits that David et al fails to explicitly teach how the cancellation of the unbalance of the circuit occurs and that the circuit is incorporated in between high and low voltage distribution lines, and the type of current sensor that was used. These are fundamental components that go to the basic operation of the claimed invention. At least in the absence of these components, and without any teaching or suggestion that there was a need for them in David et al, the Examiner must resort to hindsight based upon the Applicants' own teachings to seek out and incorporate unrelated elements from other prior art teachings to assert that the invention would be known to one of ordinary skill in the art at the time the application was filed. In particular, the Examiner looks to three other references for teachings of claimed missing elements in David et al.

**Bretz et al**

The Examiner comments that Bretz teaches that a current sensor could be a current transformer, with reference to col. 16, lines 36-39. However, the point of this comment is not clear as the subject matter of claim 1 concerns the flow of current through a "current transformer". The claimed detectors are adapted to detect currents that are flowing through a circuit of the transformer. How the substitution of a current transformer of Bretz into a current sensor of David et al would be relevant to the claimed invention is not explained by the Examiner. In any event, Applicants respectfully submit that such a substitution has no support in either reference.

**Piesinger**

The Examiner comments that Piesinger teaches a method of canceling the unbalance of a three-phase circuit by moving a load from a heavily loaded phase (i.e., the phase with maximum current) to a more lightly loaded phase (i.e., the phase with minimum current), with reference to paragraph [0003]. The Examiner appears to be suggesting that David et al inherently does not have a concern with balance of a three-phase circuit and needs to look to another reference to modify David et al for such purpose.

Applicants respectfully submit that the Examiner clearly must be using hindsight to make such suggestions since this is an omission that David has no concern with the cancellation of unbalance in a circuit. Indeed, the Examiner admits that David et al has no such concern.

**Kaku**

The Examiner comments that Kaku teaches a high voltage line (24-2) with various distribution transformers (24-3) branching off the high voltage line to supply voltage to loads on low voltage lines (24-4), on the basis of the disclosure at paragraph [0011] and Fig. 1. Applicants would respectfully submit that there is no teaching or suggestion as to how or why David would be modified in accordance with the disclosure in Kaku, as suggested by the Examiner. Indeed, the Examiner has not even mentioned a motivation for modifying David et al on the basis of Kaku in his remarks, contrary to the requirements for such express statement in

recent Federal Circuit decisions. (See e.g., *In re Lee* 277 F.3d 1338 (Fed. Cir. 2002) and *In re Rouffet* 149 F.3d 1350 (Fed. Cir. 1998).

It is clear from the Examiner's analysis and the absence of any identified teaching or suggestion for the combination of the four distinct reference teachings that there is no teaching or suggestion as to how or why any one or more of these references may be combined to complete the invention. Further, the clear absence of a zero-phase current detector and phase change-over slave station in David and the absence of any such structure in the prior art would demonstrate the patentability of claim 1. Thus, Applicants respectfully submit that this claim should be allowable over the cited prior art.

**Claims 2 and 3 are rejected under 35 U.S.C. § 103(a) as being unpatentable over David et al (6,018,203), Bretz et al (6,894,468), Piesinger (2004/0263147, and Kaku et al (2003/0002590) as applied to claim 1 and further in view of Ellermeyer (3,555,290). This rejection is traversed for at least the following reasons.**

The Examiner comments that David, Piesinger and Kaku teach a control system as described above. The Examiner admits that David fails to explicitly teach the configuration of the switches with only three inputs. The Examiner looks to Ellermeyer for a teaching of a configuration of the switching unit (10 and 11) with three inputs for the three phases, and a single output. The Examiner asserts it would have been obvious to one of ordinary skill in the art at the time of the invention to implement the switch design into David's invention "because he was silent on a precise configuration and this one is known in the art to have worked." The Examiner also asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to omit the fourth input to David et al switches (i.e., NC) since the omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. The Examiner also asserts that a "non-connection" configuration would be obvious from the switch in Ellermeyer (11) by controlling it not to make a connection to either input, therefore saving an extra switch/input."

As is clear from the examination of Ellermeyer, this reference does not remedy the severe deficiencies of David et al alone or in combination with Piesinger, Bretz et al and Kaku. The

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reference does not remedy the failure of any of the patents to provide the necessary motivation and teaching for their combination. Ellermeyer is simply cited for the teaching of a switching unit with three inputs and a single output. This alone is insufficient to provide the necessary teaching for combining the four references cited by the Examiner against claim 1.

On the basis of the foregoing, this rejection should be withdrawn.

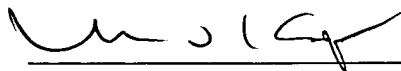
*Allowable Subject Matter*

Claims 4-6 are considered to be allowable. Applicants have amended the claims to have the subject matter of claim 4-6 covered by allowable claims. New claims 7 and 8, which depend from allowable claim 4 also should be allowed.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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